

Gigabit optical module 10 kilometers



Overview

SFP-10G-ER Explained: Powering 40km 10Gbps This comprehensive guide dives deep into the SFP-10G-ER optical transceiver module. Learn its technical specific.

Key Takeaways

Gigabit SFP transceivers for single-mode fiber can reliably transmit data over distances up to 10 kilometers.

Overview

For 10 km optical links, single-mode fiber (SMF) SFP modules are the standard choice. These modules operate at a 1310 nm wavelength and use LC connectors, providing stable, high-speed Gigabit Ethernet connectivity over long distances. They are suitable for applications such as interconnecting buildings, campus networks, industrial automation, and metropolitan area networks.

Key Features

Data Rate: 1 Gbps (Gigabit Ethernet)Fiber Type: Single-mode fiber (SMF, typically G.652 compliant)Wavelength: 1310 nmConnector Type: LC duplexMaximum Reach: Up to 10 kmHot-Pluggable: Allows easy installation and replacement without powering down equipmentDigital Diagnostics Monitoring (DDM): Some modules support real-time monitoring of optical power, temperature, and voltage for network reliabilityDeployment ConsiderationsCompatibility: Ensure the SFP module is compatible with your switch or router. Many modules are tested for interoperability with major brands like Cisco, Juniper, and Huawei.

Fiber Quality: Use low-loss single-mode fiber and clean connectors to maintain signal integrity over 10 km. **Environmental Conditions:** Check the operating temperature range, especially for industrial or outdoor deployments. Some modules support extended temperature ranges for harsh environments.

Future Expansion: If you anticipate longer distances in the future, consider 10G SFP+ modules (e.g., 10GBASE-LR) that can also support 10 km links but at higher data rates. **Example Modules**
GSFIBER-SFP-10K: Gigabit Ethernet SFP, 1310 nm, LC connector, 10 km reach. **Cisco SFP-1G-LR:** Supports 10 km over standard SMF, compatible with Cisco switches.

Fibrecross 10G SFP+ LR: While designed for 10G, it also supports 10 km links over single-mode fiber with DDM support. These modules provide a cost-effective and reliable solution for long-reach Gigabit Ethernet connections, ensuring stable network performance across extended distances.

Article Content

What Is 10GBASE-LR? SMF 1310nm 10km SFP+ Explained

10GBASE-LR is a 10-gigabit Ethernet optical standard that operates at 1310 nm over single-mode fiber (SMF), supporting link distances of up to 10 km.

SFP Transceiver

Utilizing LC connectors and operating at a 1310nm wavelength, it enables high-speed data transmission over single-mode fiber for distances up to 10 kilometers. This module provides a reliable long-reach

Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco 10GBASE-ZR module supports link lengths of up to about 80 kilometers on standard SMF (G.652). This interface is not specified as part of the

10G SFP+ Single-Mode Optical Module: The Reliable Choice For

In this context, 10 Gigabit single-mode optical modules, capable of handling both high speeds and long distances, become a reliable choice. Today, we'll discuss in simple terms why they

10G Single-Mode/10KM Fiber SFP+ Module

The 2A-142G 10G Single-Mode/10KM Fiber SFP+ Module is designed for use in 10GbE Ethernet environment that allows you to connect a single-mode Gigabit Ethernet network cable to a network

Industrial Gigabit Fiber SFP Optical Transceiver

Compatibility in your network is everything, and this industrial SFP Transceiver Module delivers. Use it with any Intellinet SFP equipped network switch or any

10G BiDi SFP+ 10km | Tx1330/Rx1270 | Single Fiber Compatible

Paired with 10A variant for bidirectional operation, this 10G BiDi module delivers 6.2 dB link budget over 10km single-mode fiber. Supporting multi-rate transmission from 1.25 to 11.32 Gbps with LC/UPC

10 Gigabit Singlemode SFP+ Fiber Optic Transceivers

These 10 Gigabit Singlemode SFP+ Transceivers support distances ranging from 10 km to 100 km, depending on the model. The 10 km version is suitable for shorter

10GBASE-LR SFP+ | From €12 | EDGE Optical Solutions

Over standard G.652 single-mode fiber (SMF), the transceiver can reach up to 10 kilometers. Distance is an indicative parameter based on the minimum optical

Ubiquiti 10G Single-Mode Optical Module UACC-OM-SM-10G-D-2

Supports single-mode fiber connections up to 10 km With 10GBase-X technology, enjoy up to 10Gbps data transfer rate over supported network cable Optimize the network's performance with 10 Gigabit

10G BiDi SFP+ 20km Tx1270/Rx1330

The BIDI-10G-SFP-20A (Tx1270/Rx1330) will pair with any SFP+ MSA-compliant Tx1330/Rx1270 BiDi module that meets the 9 dB budget and 20km reach class, which is common when one end of the

Optical Modules Market Research Report 2034

Optical Modules Market Outlook 2025-2034 The global optical modules market was valued at \$14.8 billion in 2025 and is projected to reach \$39.6 billion by 2034, advancing at a compound annual

Gigabit Ethernet

Gigabit Ethernet was the next iteration, increasing the speed to 1000 Mbit/s. The initial standard for Gigabit Ethernet was produced by the IEEE in June 1998 as

Cisco 40GBASE QSFP Modules Data Sheet

Each 10-gigabit lane of this module is compliant to IEEE 10GBASE-SR specifications. This module can be used for native 40G optical links over 12-fiber parallel cables with MPO/MTP

Cisco 40G QSFP+ Transceiver Modules - Network Warehouse

The Cisco 40G QSFP+ transceiver modules portfolio offers customers a wide variety of high-density and low-power 40 Gigabit Ethernet connectivity options.

Cisco SFP and SFP+ Transceiver Module Installation Notes

This installation note provides the installation instructions for the Cisco small form-factor pluggable (SFP) and SFP+ transceiver modules. These transceiver modules are hot-swappable

Small Form-factor Pluggable

Small Form-factor Pluggable Small Form-factor Pluggable connected to a pair of fiber-optic cables Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module format used for

The Ultimate Guide to ZTE SFP Module Distance and Wavelength

As bandwidth demands grow, 10 Gigabit Ethernet SFP+ modules become critical for aggregation and server connectivity. For long-reach applications, the 10GBASE-LR standard is used, with an SFP+

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

